

1. A refill for a mop of the type having a mop head with a lower surface and an
2 opposed upper surface interconnected by a leading and a trailing edge, the mop head having
gripping means provided on the upper surface for retaining a cleaning sheet on the mop head,
4 the refill comprising:

a base layer having a front edge and an opposed rear edge with a midportion
6 therebetween, the base layer configured to be wrapped about the mop head with the
midportion adjacent the lower surface of the mop head and the front and rear edges wrapping
8 onto the upper surface of the mop head so as to be retained by the gripping means;
a plurality of cleaning sheets, each removably supported on the midportion of the
10 base layer in a stacked configuration, each of the sheets having an outward face for cleaning
and an opposed inward face, the outward face of each of the sheets configured for contacting
12 a surface to be cleaned and thereby becoming soiled, whereby when the outward face of the
outermost sheet becomes soiled, the sheet may be peeled away to expose a non-soiled sheet.

2. The refill according to claim 1, wherein the gripping means on the mop head
2 comprises tabs, the base layer having a front margin extending between the front edge and
the midportion and a rear margin extending between the rear edge and the midportion,
4 openings defined in the front and rear margins for receiving the tabs such that the refill is
retained on the mop head.

3. The refill according to claim 1, wherein the cleaning sheets each are formed

2 of a non-woven material.

4. The refill according to claim 1, wherein the cleaning sheets are held in the
2 stacked configuration by a releasable adhesive.

5. The refill according to claim 1, wherein the cleaning sheets are held in the
2 stacked configuration by having portions of each of the cleaning sheets sonically welded
to portions of other of the cleaning sheets or the base layer.

6. The refill according to claim 1, wherein the base layer comprises a plastic
2 sheet.

7. The refill according to claim 1, wherein the base layer comprises a sheet
2 of non-woven material.

8. The refill according to claim 1, wherein the cleaning sheets are disposed only
2 on the midportion of the base layer such that they do not wrap around the leading or trailing
edges of the mop head when the refill is disposed thereon.

9. The refill according to claim 1, wherein the cleaning sheets are coextensive
2 with the base layer.

10. The refill according to claim 1, wherein the cleaning sheets are sized such that
2 the cleaning sheets wrap around the leading and trailing edges of the mop head when the
refill is disposed thereon, but the cleaning sheets do not extend to the front and rear edges of
4 the base layer.

11. The refill according to claim 9, wherein each of the cleaning sheets has a front
2 edge portion and a rear edge portion that are disposed at least partially on the upper surface
of the mop head when the refill is disposed thereon, the front edge portions of each of the
4 cleaning sheets being bonded to each other and the rear edge portions of each of the cleaning
sheets being bonded to each other to hold the cleaning sheets in the stacked configuration.

12. The refill according to claim 11, wherein each of the cleaning sheets
2 comprises a layer of non-woven material, the bonded front and rear edge portions comprising
the non-woven material being compressed and heat or sonically bonded such that the overall
4 thickness of the edge portions of the stack of cleaning sheets is substantially reduced in
comparison to the overall thickness of the stack of cleaning sheets adjacent the midportion of
6 the base layer.

13. The refill according to claim 12, wherein each of the non-woven cleaning
2 sheets is perforated adjacent the front and rear edge portions such that an outermost sheet
may be peeled away by separating the sheet at the perforations.

14. The refill according to claim 12, wherein each of the non-woven cleaning
2 sheets has a weakened area adjacent the front and rear edge portions such that an outermost
sheet may be peeled away by separating the sheet at the weakened areas.

15. The refill according to claim 11, wherein each of the cleaning sheets
2 comprises a backing layer that is coextensive with the base layer and a cleaning layer that is
not coextensive with the base layer such that the backing layer of each of the cleaning sheets
4 extends beyond the cleaning layer to define the front and rear edge portions which are
bonded to each other.

16. The refill according to claim 15, wherein the base layer of each of the
2 cleaning sheets comprises a moisture barrier layer and the cleaning layer of each of the
cleaning sheets comprises a bibulous layer.

17. The refill according to claim 15, wherein the base layer of each of the
2 cleaning sheets comprises a first non-woven material and the cleaning layer of each of the
cleaning sheets comprises a second non-woven material.

18. The refill according to claim 17, wherein the first non-woven material is
2 thinner and denser than the second non-woven material

19. The refill according to claim 15, wherein each of the base layers is perforated

- 2 adjacent the front and rear edge portions such that an outermost sheet may be peeled away by separating the sheet at the perforations.
20. The refill according to claim 15, wherein each of the base layers has a weakened area adjacent the front and rear edge portions such that an outermost sheet may be peeled away by separating the sheet at the weakened areas.
21. The refill according to claim 1, wherein a portion of each of the cleaning sheets is coated with adhesive to facilitate retention of debris.
22. The refill according to claim 21, wherein the adhesive coated portions are portions adjacent the leading and trailing edges of the mop head when the refill is disposed thereon, and the portions of the cleaning sheets disposed on the lower surface of the mop head when the refill is disposed thereon are not adhesive coated.
23. The refill according to claim 1, wherein each of the cleaning sheets is statically charged to facilitate retention of debris.
24. The refill according to claim 1, wherein each of the cleaning sheets is formed of a material that develops a static charge when passed over a surface to be cleaned.

- TOP SECRET//COMINT
25. A refill for a cleaning implement of the type having a head with a lower surface and an upper surface, the upper surface having gripping means thereon, the refill comprising:
- 2 a plurality of coextensive cleaning sheets disposed in a stacked configuration, each cleaning sheet comprising a cleaning layer having an outward face for cleaning and an opposed inward face, the outward face of each of the cleaning layers configured to contact a surface to be cleaned and thereby become soiled;
- 4 each cleaning sheet having a front edge portion and an opposed rear edge portion with a midportion defined therebetween, the front edge portions of each of the cleaning sheets being bonded to each other and the rear edge portions of each of the cleaning sheets being bonded to each other so as to retain the cleaning sheets in the stacked configuration;
- 6 the stack of cleaning sheets configured to be wrapped about the head of the cleaning implement such that the bonded front edge portions and rear edge portions engage the gripping means on the upper surface of the cleaning implement head and the midportions of each of the cleaning sheets is disposed on the lower surface of the cleaning implement head;
- 8 and
- 10 a portion of each of the cleaning sheets being separable from the stack of cleaning sheets without releasing the refill or the individual cleaning sheet from the gripping means, such that when the outermost sheet becomes soiled, the separable portion of the sheet may be peeled away to expose a portion of a non-soiled sheet.

26. The refill according to the claim 25, wherein each of the cleaning sheets is

- 2 perforated between the front edge portion and the midportion and between the rear edge portion and the midportion such that the separable portion of each of the cleaning sheets
- 4 comprises the midportion and the separable portion is peeled away by separating the sheet at the perforations.

27. The refill according to claim 25, wherein each of the cleaning sheets has a
- 2 weakened area between the front edge portion and the midportion and another weakened area between the rear edge portion and the midportion such that the separable portion of each of
- 4 the cleaning sheets comprises the midportion and the separable portion is peeled away by separating the sheet at the weakened areas.

28. The refill according to claim 25, wherein each cleaning layer comprises a
- 2 non-woven material.

29. The refill according to claim 25, wherein each cleaning sheet further
- 2 comprises a backing layer, the cleaning layer being attached to the backing layer such that the cleaning layer defines an outward face of the cleaning sheet and the backing layer defines
- 4 an inward face of the cleaning sheet.

30. The refill according to claim 29, wherein the backing layers are larger than
- 2 the cleaning layers such that portions of each of the backing layers project forwardly and

rearwardly beyond the cleaning layer to define a front and rear margin, the front margins
4 being bonded to each other to form the bonded front edge portions and the rear margins
being bonded to each other to form the bonded rear edge portions.

31. The refill according to claim 30, wherein the backing layer is plastic and the
2 cleaning layer is a non-woven material.

32. The refill according to claim 30, wherein the backing layer is paper.

33. The refill according to claim 30, wherein each backing layer comprises a first
2 non-woven material and each cleaning layer comprises a second non-woven material.

34. The refill according to claim 33, wherein the first and second non-woven
2 materials are the same material.

35. The refill according to claim 33, wherein the first non-woven material is
2 thinner than the second non-woven material.

36. The refill according to claim 33, wherein the first non-woven material is
2 denser than the second non-woven material.

37. The refill according to claim 25, wherein the midportion of each of the
2 cleaning sheets has a first thickness and the front and rear edge portions of each of the
cleaning sheets have a second thickness less than the first thickness.

38. The refill according to claim 37, wherein each of the cleaning sheets is a non-
2 woven material.

39. The refill according to claim 25, wherein the bonded front and rear edge
2 portions are compressed and sonically or heat bonded such that the overall thickness of the
edge portions of the stack is significantly reduced in comparison to the overall thickness of
4 the midportion of the stack.

40. The refill according to claim 39, wherein the overall thickness of the
2 midportion is 3 or more times the overall thickness of the bonded portions.

41. The refill according to claim 39, wherein the overall thickness of the
2 midportion is 6 or more times the overall thickness of the bonded portions.

42. The refill according to claim 39, wherein the overall thickness of the
2 midportion is 8 or more times the overall thickness of the bonded portions.

43. The refill according to claim 25, wherein the gripping means on the mop head

2 comprises tabs, the bonded front and rear edge portions having openings defined therein for receiving the tabs such that the refill is retained on the mop head.

44. A cleaning sheet for use with a mop of the type having a generally rectangular
2 mop head with an upper surface and an opposed lower surface, the upper surface having a
gripping means defined thereon

4 a base layer configured to be wrapped about the head of the cleaning implement, the
base layer having a pair of edge portions with a central portion therebetween, the edge
6 portions engaging the gripping means on the upper surface of the head and the central
portion being disposed on the lower surface of the head when the sheet is wrapped about the
8 head; and

10 a cleaning layer attached to the base layer so as to define an outward face of the
cleaning sheet.

45. The cleaning sheet according to claim 44, wherein the base layer comprises a
2 moisture barrier layer and the cleaning layer comprises a bibulous layer.

46. The cleaning sheet according to claim 44, wherein the base layer is larger than
2 the cleaning layer such that portions of the base layer project forwardly and rearwardly
beyond the cleaning layer to define a front and a rear margin.

TOP SECRET - 10511SH

47. The cleaning sheet according to claim 46, wherein the front and rear margins
2 have an adhesive disposed thereon to facilitate retention of debris.

48. The cleaning sheet according to claim 44, wherein the base layer is a first
2 non-woven material and the cleaning layer is a second non-woven material.

49. The cleaning sheet according to claim 48, wherein the first and second non-
2 woven materials are the same material.

50. The cleaning sheet according to claim 48, wherein the first non-woven
2 material is thinner than the second non-woven material.

51. The cleaning sheet according to claim 48, wherein the first non-woven
2 material is denser than the second non-woven material.

52. A cleaning mitt comprising:
2 a plurality of coextensive mitt shaped cleaning sheets disposed in a stacked
configuration, each cleaning sheet having a central portion bounded by an outer perimeter,
4 the outer perimeter including a first edge;
the perimeters of the cleaning sheets being bonded to each other except along the first
6 edge such that the plurality of cleaning sheets are retained in the stacked configuration, the
first edge defining an opening such that a hand may be passed between adjacent cleaning

- 8 sheets to a position between the central portions of the adjacent cleaning sheets; and
a portion of each of the cleaning sheets being separable from the stack of cleaning
- 10 sheets such that when an outermost sheet becomes soiled, the separable portion of the cleaning sheet may be peeled away to expose a portion of a non-soiled sheet.

53. The cleaning mitt according to claim 52, wherein the central portions of the
2 cleaning sheets are not bonded to each other such that the hand may be positioned between
any two adjacent cleaning sheets.

54. The cleaning mitt according to claim 52, wherein the mitt shaped sheets do
2 not include a discrete thumb region, whereby the mitt may be reversed and used on either
hand.

55. The cleaning mitt according to claim 52, wherein the cleaning sheets each
2 comprises a single layer of non-woven material.

56. The cleaning mitt according to claim 53, wherein the cleaning sheets each
2 comprise a cleaning layer and a backing layer.

57. The cleaning mitt according to claim 56, wherein the cleaning layer is a non-
2 woven material and the backing layer is moisture barrier layer.

58. The cleaning mitt according to claim 52, wherein the bonded portions of the
2 perimeters of the cleaning sheets are bonded to each other compressing the sheets and sonic
welding or heat melting the sheets to each other such that the overall thickness of the bonded
4 portions is substantially reduced in comparison to the overall thickness of the central
portions.

59. The cleaning mitt according to claim 52, wherein each of the cleaning sheets
2 is perforated adjacent the bonded perimeter such that the separable portion of an outermost
sheet may be peeled away by separating the sheet at the perforations.

60. The cleaning mitt according to claim 52, wherein each of the cleaning sheets
2 has a weakened area adjacent the bonded perimeter such that the separable portion of an
outermost sheet may be peeled away by separating the sheet at the weakened area.

61. The cleaning mitt according to claim 52, wherein the bonded perimeters are
2 bonded in a continuous line.

62. The cleaning mitt according to claim 52, wherein the bonded perimeters are
2 bonded at discrete points along the perimeter.

63. The cleaning mitt according to claim 52, wherein the bonded perimeters are
2 bonded by mechanically interconnecting the perimeters.

64. The cleaning mitt according to claim 52, wherein the mechanical
2 interconnecting is sewing.

65. A cleaning mitt comprising:
2 a plurality of coextensive mitt shaped cleaning sheets disposed in a stacked
configuration, each cleaning sheet having a central portion bounded by an outer perimeter,
4 the outer perimeter including a first edge, each cleaning sheet comprising a sheet of non-
woven material;
6 the perimeters of the cleaning sheets being bonded by sonic welding or heat melting
to each other except along the first edge such that the plurality of cleaning sheets are retained
8 in the stacked configuration, the first edge defining an opening such that a hand may be
passed between adjacent cleaning sheets to a position between the central portions of the
10 adjacent cleaning sheets; and
each of the cleaning sheets being perforated adjacent the bonded perimeter such that a
12 portion of each of the cleaning sheets is separable from the stack of cleaning sheets by
separating the sheet at the perforations;
14 whereby when an outermost sheet becomes soiled, the separable portion of the
cleaning sheet may be peeled away to expose a portion of a non-soiled sheet.

66. The cleaning mitt according to claim 65, wherein the bonded perimeters are
2 bonded in a continuous line.

67. The cleaning mitt according to claim 65, wherein the bonded perimeters are
2 bonded at discrete points along the perimeter.

68. A cleaning mitt comprising:
2 a plurality of coextensive mitt shaped cleaning sheets disposed in a stacked
configuration, each cleaning sheet having a central portion bounded by an outer perimeter,
4 the outer perimeter including a first edge, each cleaning sheet comprising a sheet of non-
woven material;
6 the perimeters of the cleaning sheets being bonded by sonic welding or heat melting
to each other except along the first edge such that the plurality of cleaning sheets are retained
8 in the stacked configuration, the first edge defining an opening such that a hand may be
passed between adjacent cleaning sheets to a position between the central portions of the
10 adjacent cleaning sheets; and
the bonding of the perimeters being separable such that each of the cleaning sheets is
12 separable from the stack of cleaning sheets by separating the sheet at the bonded perimeter;
whereby when an outermost sheet becomes soiled, the cleaning sheet may be peeled
14 away to expose a non-soiled sheet.

69. The cleaning mitt according to claim 68, wherein the bonded perimeters are
2 bonded in a continuous line.

70. The cleaning mitt according to claim 68, wherein the bonded perimeters are
2 bonded at discrete points along the perimeter.

71. The cleaning mitt according to claim 70, wherein the discrete bonding points
2 comprise sonically welded or heat melted dots having a diameter in the range of 1/32 to 1/8
inch.

72. A cleaning mitt comprising:
2 a plurality of coextensive mitt shaped sheets disposed in a stacked configuration, the
sheets comprising;
4 a topmost sheet having an attachment means on an upper side thereof; and
a plurality of non-woven cleaning sheets;
6 each of the mitt shaped sheets having a central portion bounded by an outer
perimeter, the outer perimeter including a first edge;
8 the perimeters of the sheets being bonded by sonic welding or heat melting to each
other except along the first edge such that the plurality of sheets are retained in the stacked
10 configuration, the first edge defining an opening such that a hand may be passed between
adjacent sheets to a position between the central portions of the adjacent sheets; and
12 each of the cleaning sheets being perforated adjacent the bonded perimeter such that a
portion of each of the cleaning sheets is separable from the stack of cleaning sheets by
14 separating the sheet at the perforations, the sheet being foldable over a bonded perimeter
such that the soiled side of the sheet is disposed against the attachment means on the upper

16 side of the topmost sheet and the non-soiled side of the sheet can be used for further cleaning.

73. A method of cleaning a surface, comprising the steps of:

2 providing a cleaning mitt comprising:

4 a plurality of coextensive mitt shaped cleaning sheets disposed in a stacked configuration, each cleaning sheet having a central portion bounded by an outer perimeter, the outer perimeter including a first edge;

6 the perimeters of the cleaning sheets being bonded to each other except along the first edge such that the plurality of cleaning sheets are retained in the stacked configuration, the 8 first edge defining an opening such that a hand may be passed between adjacent cleaning sheets to a position between the central portions of the adjacent cleaning sheets; and

10 a portion of each of the cleaning sheets being separable from the stack of cleaning sheets such that when an outermost sheet becomes soiled, the separable portion of the 12 cleaning sheet may be peeled away to expose a portion of a non-soiled sheet;

inserting a hand between adjacent cleaning sheets;

14 contacting and cleaning the surface with an outermost sheet of the cleaning mitt until the sheet becomes soiled;

16 partially peeling the soiled outermost sheet away;

18 folding the partially peeled sheet over the bonded perimeter such that the backside of the sheet is exposed and the soiled side is against another cleaning sheet; and

contacting and further cleaning the surface with the backside of the soiled cleaning
20 sheet.

74. A refill for a mop of the type having a mop head with a lower surface and an
2 opposed upper surface interconnected by a leading and a trailing edge, the mop head having
gripping means provided on the upper surface for retaining a cleaning sheet on the mop head,
4 the refill comprising:

a plurality of cleaning sheets each having a front edge portion, a rear edge portion,
6 and a midportion therebetween, the midportion having a bottom face comprising a cleaning
layer, the edge portions having a thickness less than the midportion;
8 the front edge portions of the cleaning sheets being bonded together to form a front
connection area; and
10 the rear edge portions of the cleaning sheets being bonded together to form a rear
connection area.

75. The refill according to claim 74, wherein the plurality of cleaning sheets
2 comprises at least 5 sheets and the front and rear connection areas have a thickness less than
1/4 inch.

76. The refill according to claim 74, wherein the plurality of cleaning sheets have
2 an thickness in the midportion of 1/2 inch or more and the front and rear connection areas

have an overall thickness less than 1/4 inch.

77. The refill according to claim 76, wherein the overall thickness of the front and
2 rear connection areas is less than 1/8 inch.

78. The refill according to claim 74, wherein the plurality of cleaning sheets has
2 an overall thickness in the midportion that is at least three times the overall thickness of the
front and rear connection areas.

79. The refill according to claim 74, wherein the plurality of cleaning sheets has
2 an overall thickness in the midportion that is at least six times the overall thickness of the
front and rear connection areas.

80. The refill according to claim 74, wherein the plurality of cleaning sheets has
2 an overall thickness in the midportion that is at least eight times the overall thickness of the
front and rear connection areas.